

Final Draft Feasibility Study and Environmental Impact Statement

**Former Maintenance and Fueling
Facility
Skykomish, Washington**

Volume One: Text, Tables and Figures

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Executive Summary

The following is a summary of the cleanup alternatives presented in the Preliminary Draft Feasibility Study (FS) and Environmental Impact Statement (EIS) for the Former Maintenance and Fueling Facility in Skykomish, Washington (August 14, 2003). The draft of this document should be released in September 2003 for a 60-day public comment period. The Department of Ecology will carefully consider public comment during preparation of the draft Cleanup Action Plan. BNSF believes that each alternative, except the No Action alternative, can achieve cleanup standards and protect public health and the environment. Ecology will evaluate each alternative during remedy selection. Selecting a final cleanup action from among the alternatives requires balancing several factors, including the restoration time frame, degree of permanence (including cost), and adverse impacts to the community and natural environment. In general, more aggressive technologies cost more, work faster, and are more permanent, but they have greater adverse impacts on the community and natural environment. Public comment on the FS/EIS is intended to let Ecology and BNSF know how the public would balance these same factors.

A glossary of terms is included for reference at the end of this summary.

Site Background

The former railway maintenance and fueling facility in the east King County town of Skykomish is now owned and operated by The Burlington Northern and Santa Fe Railway Company (BNSF). Historical activities since the facility opened in the late 1890s included refueling and maintaining locomotives and operating an electrical substation for electric engines. These activities released contaminants to the surrounding environment. BNSF has accepted responsibility for cleaning this historical contamination at the site consistent with the Model Toxics Control Act (MTCA).

Fuel was stored in underground storage tanks at the site until 1974, when BNSF discontinued most fuel handling activities at its Skykomish facility. The BNSF facility is currently used as a base of operations for track maintenance and snow removal crews.

Railroad Avenue separates BNSF property from the main commercial district of the town. Maloney Creek flows south of BNSF property and west to the South Fork of the Skykomish River. The site encompasses an area of about 40 acres and includes BNSF property and adjacent property. The approximate boundaries of the study area are as follows: the Skykomish River to the north, approximately the Old Cascade Highway to the south, Maloney Creek to the west, and Skykomish city limits to the east.

In early 1991, Washington Department of Ecology (Ecology) designated the former maintenance and fueling facility a high priority cleanup site. Later that

year, BNSF indicated a desire to initiate a Remedial Investigation/Feasibility Study (RI/FS) in accordance with MTCA. At that time, formal negotiations for a legal agreement (called an Agreed Order) were initiated. Negotiations were completed in mid-1993. Following a public comment period, the Agreed Order, which includes detailed work plans for the RI/FS process and early interim cleanup work, was signed by Ecology and BNSF. BNSF and Ecology signed a separate agreed order in 2001 for additional interim cleanup work near the Skykomish River and the levee west of Fifth Avenue.

Contaminants of Concern

Investigations performed by BNSF in cooperation with Ecology since 1993 have revealed petroleum contamination in soil, groundwater, the River and old Maloney Creek that exceeds state standards. The contamination has migrated beyond the railroad property and has been found underneath homes and businesses in Skykomish and in “seeps” on the banks of the Skykomish River. In addition, the investigation found lead and arsenic in soils to a depth of approximately six inches.

Based on available data, the site contamination consists of the following:

- **Soils** – Surface soils on the railyard contain petroleum (diesel and Bunker C), lead and arsenic above state cleanup standards. Lead and arsenic was also found above cleanup standards in surface soils off of BNSF property, but the source of these contaminants is unknown. In some areas of the site, including areas off the railyard, subsurface soils contain petroleum and its components (e.g., polynuclear aromatic hydrocarbons or PAHs) to an approximate 15-foot depth.
- **Groundwater** – Mixtures of both floating and dissolved diesel and Bunker C are present in groundwater beneath the site at levels greater than allowed under state law.
- **Surface Water** – Diesel and Bunker C from upland areas are seeping into the river after being transported underground by groundwater.
- **Sediments** – Petroleum and PAHs are present in sediments along the riverbank at seep locations and below the old Maloney Creek channel.

Cleanup Process

BNSF and Ecology are working with the local community to ensure all exposure pathways are evaluated and the site is cleaned up. The contaminants are known to be toxic above certain concentrations, and some components are

known human carcinogens. The material seeping into the Skykomish River and floating on the groundwater north of the railyard are primary concerns. Although the seep contamination poses little immediate risk to human health, cleanup is necessary to minimize any long-term risk and improve the overall environmental health of the town of Skykomish and the Skykomish River. Cleanup actions will include activities to stop contaminants from seeping into the River.

Additional Interim Action to Address Seeps to the River in 2001

BNSF enhanced its product recovery system to halt contaminants from seeping into the Skykomish River through the levee from the uplands area through an Interim Action during 2001. An Interim Action is any action that partially addresses the final cleanup of a site. The Interim Action resulted in construction of an underground barrier wall west from the bridge along West River Road to stop seeps from reaching the River. Monitoring wells were installed behind (upgradient of) the wall and at the ends of the wall to determine where contaminants accumulate. Temporary recovery operations are conducted from these wells. During the second phase, the wells that contain the most petroleum products were converted into product recovery wells such as the recovery wells that currently skim petroleum from groundwater, and additional wells were installed.

Remedial Investigation, Feasibility Study, and Environmental Impact Statement Reports

BNSF submitted a Remedial Investigation Report (RI) to Ecology in 1996 and a Supplemental RI Report in 2002. These studies provide baseline data about soil, groundwater, surface water, air and river sediments throughout the site that are being used to develop cleanup options that are physically, economically, socially and scientifically feasible.

Based on the findings of the RI, BNSF prepared a Preliminary Draft Feasibility Study and Environmental Impact Statement (June 13, 2003) to evaluate cleanup alternatives and the potential impacts of those alternatives on the Skykomish site. The Preliminary Draft FS/EIS was revised based on comments from Ecology and in September 2003 the Draft FS/EIS, along with the 1996 Remedial Investigation report and 2002 Supplemental RI report, will be released by Ecology for public review and comment. Ecology will carefully consider public comment during preparation of the draft Cleanup Action Plan.

Draft Cleanup Action Plan

After public input is received on the FS/EIS, a cleanup alternative will be selected by Ecology. Ecology will issue the Draft Cleanup Action Plan (CAP) with the draft Consent Decree for public comment. The draft CAP will outline the work to be performed during the actual cleanup of the site. Once

comments are received and reviewed and any necessary changes are made, BNSF and Ecology will negotiate a consent decree to implement the Final CAP. The Final CAP will be an exhibit to the Consent Decree. The consent decree is a legal agreement between Ecology and BNSF that establishes their rights and obligations with respect to the Final CAP. The Final CAP will contain cleanup details, cleanup levels and points of compliance where BNFS must achieve cleanup. The Cleanup Action Plan and the consent decree will also be available for public comment.

Cleanup Zones

One of the first steps in developing the remedial alternatives described in the FS/EIS was to divide the site into cleanup zones based on land use (railyard, commercial, residential), land type (wetland, levee, upland), exposure pathways, and distribution and chemical composition of the hazardous substances. The cleanup zones are described below.

- 1) Aquatic Resource Zones
 - ▶ Skykomish River and Levee
 - ▶ Former Maloney Creek channel
- 2) Developed Zones (land that has been or will likely be developed for commercial or residential use)
 - ▶ Northwest (NW) – affected by petroleum plume composed of diesel and bunker C
 - ▶ South – affected by petroleum plume composed of diesel and bunker C
 - ▶ Northeast (NE) – affected by petroleum plume of which 75% or greater is diesel (less viscous, more soluble, more biodegradable)
- 3) Railyard Zone
 - ▶ BNSF property
 - ▶ Two small areas immediately adjacent to the yard that are contaminated with surface soil metals, one of which is also contaminated with surface and subsurface TPH.

Figure 6-1 of the FS/EIS shows the locations of the cleanup zones.

For each suggested remedial alternative, technologies and approaches are described for each cleanup zone.

Cleanup Standards

Cleanup standards establish:

- 1) The cleanup level, which is the concentration of a hazardous substance that protects human health and the environment under specific exposure conditions;
- 2) The location on the site where that cleanup level must be reached, called the point of compliance;
- 3) Other regulatory requirements that apply due to the type of cleanup action and/or location of the site.

Cleanup levels and points of compliance are established for each type of contaminated media. At the site, there are four media with contamination: soil, sediments, surface water, and groundwater.

For all remedial alternatives presented in the FS/EIS, the points of compliance are the same for soils, sediments, and surface water. However, three different points of compliance were developed for groundwater.

Groundwater Points of Compliance:

- 1) **Standard Point of Compliance** – Groundwater must meet cleanup levels throughout the site, from the uppermost level of the saturated zone and extending to the lower-most depth that could potentially be affected by the site.
- 2) **Conditional Point of Compliance, On-Property** – Groundwater must meet cleanup levels at the BNSF property boundary.
- 3) **Conditional Point of Compliance, Off-Property** – Groundwater must meet cleanup levels at the point it discharges to the Skykomish River and the former Maloney Creek channel, or as close as practicable to the source. (Note: affected property owners between BNSF's property boundary and the Skykomish River must agree in writing to setting this conditional point of compliance.)

Institutional Controls

Institutional controls are part of some of the cleanup action alternatives in the Draft FS/EIS. Institutional controls, which are legal or administrative measures designed to limit or control activities that could result in exposures. They are particularly used in situations where contaminant residues are likely to remain above cleanup levels for an extended period of time. A Restrictive Covenant is one common type of institutional control; it limits or restricts the use of a property and is binding for all current and future owners of the

property. Another common institutional control is a local ordinance or state regulation that limits installation of groundwater wells or requires special permits before excavation or drilling in contaminated soil. For example, Skykomish currently has an ordinance limiting installation of groundwater wells. Although this was not adopted as part of the cleanup, it is an example of a local ordinance that limits exposure to contaminated groundwater.

Some type of institutional controls will be required for all alternatives, except the Standard, to ensure protection from residual contaminated soil and groundwater.

Remedial Alternatives

The site-wide remedial alternatives were developed to meet the cleanup standards for the three groundwater points of compliance described above. The Standard alternative uses the standard groundwater point of compliance described above. The PB, or BNSF Property Boundary, alternatives (PB1 through PB4) use the on-property groundwater point of compliance, while the SW, or Surface Water, alternatives (SW1 through SW4) use the off-property groundwater point of compliance. In addition, a No Action alternative is evaluated, as required by environmental regulations.

Individual technologies were selected for each cleanup zone and then grouped based on their ability to comply with cleanup standards and attain remediation levels. Each technology is described in Section 6.4.1 of the FS/EIS.

All alternatives, except the No Action alternative, can achieve cleanup standards and protect public health and the environment. Selecting a cleanup action from among the alternatives will require balancing several factors, including the restoration time frame, degree of permanence (including cost), and adverse impacts to the built and natural environment. In general, more aggressive technologies cost more, work faster, and are more permanent, but they have greater adverse impacts on the built and natural environment. Table 6-4 in the FS/EIS is a matrix that shows which technology is used in each cleanup zone and for each medium by alternative.

- **No Action** – A No Action alternative must be evaluated in the FS/EIS for comparison with the other alternatives. It would entail continuing the actions already in progress at the site: the barrier wall, free product skimming system, dust suppressant on metals-impacted surface soils in the railyard, oil recovery booms, and long-term groundwater monitoring. Although the No Action alternative would not protect people or ecological receptors from contamination, it would not disrupt the built environment in the same way that the other alternatives will. The natural environment, however, would continue to be significantly and

adversely impacted by the contaminants, and long-term presence of contamination could deter future investment in the community.

- **Standard (STD)** – Cleanup levels will be met at standard points of compliance throughout the site for all media. As such, the Standard alternative represents the most permanent alternative. Sediment will be cleaned by some combination of recovery, removal, and enhanced bioremediation. All free product and contaminated soil will be removed. Groundwater will undergo free product and soil removal and then be restored to drinking water quality through natural attenuation. Long-term maintenance, inspection, and monitoring are not required. The Standard alternative is included in the FS/EIS to satisfy the MTCA requirement that there be one alternative that achieves cleanup levels for all media at standard points of compliance. It relies on excavation of all free product, all impacted soil, and all sediment above cleanup levels. The River and Maloney Creek would be restored, the levee would be rebuilt, and structures, roads and utilities would be removed, replaced or rebuilt.
- **SW (Surface Water)** – The SW alternatives meet cleanup standards for groundwater at an off-property, conditional groundwater point of compliance. In other words, groundwater must be clean before it discharges into the Skykomish River and former Maloney Creek channel or as close to the source as practicable. The SW alternatives will improve groundwater at the site but will not meet groundwater or soil cleanup levels on BNSF property or on properties between the BNSF property and the River. All free product will be removed, petroleum discharges to the River will be eliminated, and surface soil metals contamination will be excavated. Subsurface soil contamination of the railyard and areas between the railyard and the River will continue to exceed cleanup levels. Protection is achieved in areas where soil or groundwater exceed cleanup levels through a protective soil cap, institutional controls, and a long-term maintenance and monitoring program.
- **PB (Property Boundary)** – The PB alternatives meet cleanup standards for groundwater at an on-property, conditional groundwater point of compliance at the railyard property boundary. This means that groundwater must be clean at the BNSF property boundary. All free product will be removed, petroleum discharges to the River will be eliminated, surface contamination will be removed and groundwater between the railyard and River will be restored to levels protective of human health. Subsurface soil on and off the railyard and groundwater on

the railyard will continue to exceed cleanup levels. Protection from this material will be achieved through containment, institutional controls, and a long-term maintenance, inspection and monitoring program.

Estimated Cost of Remedial Alternatives

Table 7-6 of the FS/EIS lists the estimated costs of each remedial alternative, broken into cost per technology for each cleanup zone. Figure 7-1 displays this information graphically. Detailed bases for cost estimates are in Appendix L. Totals for each alternative are as follows.

Remedial Alternative	Total Cost
No Action	\$1,500,000
SW1	\$4,400,000
SW2	\$7,700,000
SW3	\$10,400,000 - \$10,900,000
SW4	\$19,400,000 - \$29,500,000
PB1	\$10,500,000
PB2	\$16,200,000 - \$22,800,000
PB3	\$20,900,000 - \$31,600,000
PB4	\$31,700,000 - \$48,700,000
Standard	\$49,600,000

The most expensive elements of cleanup are the NW Developed Zone, the levee, and the railyard. In general, cost increases as the amount of contaminated material removed increases. For each remedial alternative, Figure 8-2 shows both the total cost and the volumes of material removed or treated. The other factor to consider is degree of permanence of the alternative, which correlates with the amount of material removed, and thus cost as well. The “cost effectiveness” of each remedial alternative can be approximated by comparing cost per soil removal volumes, as illustrated in Figure 8-3.

Since a high level of protection can be achieved by all remedial alternatives, the key differences influencing decisions on a remedial alternative are permanence, restoration time frame and adverse impacts on the built and natural environment.

Restoration Time Frames

Figures 8-10, 8-11 and 8-12 of the FS/EIS illustrate the time frames estimated for removal of free product, restoration of groundwater to cleanup levels at the point of compliance, and restoration of soil to cleanup levels at the point of

compliance, respectively. For each media addressed, the figures show time frame per cleanup zone.

Free product will be removed from all off-railyard areas within 10 years for six of the nine alternatives. Free product is removed within 30 years from the railyard for 3 of the alternatives. All alternatives except one achieve cleanup standards for soil and groundwater within 10 years. Three of the alternatives achieve cleanup standards within 5 years, however five of the remaining alternatives exceed the 5 years because they rely on destruction or detoxification technologies that provide a greater degree of long-term effectiveness.

Selecting a Preferred Remedial Alternative

Section 8 of the FS/EIS guides the selection of a preferred remedy by summarizing how each alternative complies with MTCA's minimum and "other" requirements. This section also provides a comparison of the significant adverse environmental impacts and reasonable mitigation measures of the alternatives, consistent with SEPA.